

Patent Claims

1. Apparatus for carrying out liquid-liquid micro extraction or liquid-liquid-liquid micro extraction with high enrichment, characterised in that it comprises

- a) a container for a sample solution having volume V_s with dissolved substance, analyte, to be analysed, *low*
- b) a second container arranged in the first container, preferably a disposable container, having permeable membrane walls, for an acceptor solution, having volume V_a , wherein *what for when $V_a \rightarrow \infty$, or so?*
- 1) $V_s : V_a \geq 50$ and *ratio?*
 - 2) about $1 \mu l \leq V_a \leq 50 \mu l$,
- c) stirring means, preferably a magnetic bar.

2. Apparatus according to 1, characterised in that the container for the acceptor solution is a microporous hollow fibre. *claim*

3. Apparatus according to claims 1 and 2, characterised in that the container is a hollow fibre of an active polymer. *or 6, 2*

4. A method for liquid-liquid micro extraction with high enrichment by the use of the apparatus according to claim 1, characterised in that

- a) the container for acceptor solution is lowered into an acceptor solution so that the membrane wall is impregnated with and the container is filled with a defined volume of the acceptor solution, *what?*
- b) the container filled under a) is transferred to the container having a defined volume of the sample solution with the analyte that is sought,
- c) the sample solution with analyte is stirred until extraction equilibrium is established for the analyte in the two solutions, and
- d) the acceptor solution containing enriched analyte is removed from its container for analysis of the analyte. *how occurs?*

5.

A method for liquid-liquid-liquid micro extraction with high enrichment by the use of the apparatus according to claim 1, characterised in that

- a) the walls of the container for the acceptor solution are impregnated with, for immobilisation of, a liquid that is immiscible with the sample solution and the acceptor solution, *of solvent*
- b) the container for acceptor solution is filled with a defined volume thereof and
- c) is lowered into the container having a defined volume of the sample solution with the analyte that is sought,
- d) the sample solution with analyte is stirred until extraction equilibrium is established between *practically*
 - i) the sample solution and the immobilised liquid, and
 - ii) the immobilised liquid and the acceptor solution, and
- e) the acceptor solution with enriched analyte is removed from its container for analysis of the analyte. *how?*

6.

one of
A method according to claims 4 and 5, characterised in that a microporous hollow fibre is used as the container for acceptor liquids.

7.

A method according to claim 5, characterised in that a microporous hollow fibre made of an active polymer is used as the container for the acceptor liquid.

8.

one of
A method according to claims 5 to 7, characterised in that both the sample solution and the acceptor solution are aqueous liquids.

9.

one of
A method according to claims 5, 6 and 8, characterised in that the liquid immobilised in the membrane is an organic liquid immiscible with aqueous liquids.
never sealed

10.

A method according to claims 5 to 9, characterised in that the sample solution is a basic aqueous biological sample and the acceptor solution is an acidified, aqueous liquid for extraction of basic analytes.

11.

A disposable device for use in liquid-liquid micro extraction, characterised in that it has the form of a sponge body having defined pore volume for absorption of an immobilised acceptor solution for an analyte from a volume of a sample solution.

1. General 2. Specific 3. Particular 4. Detail 5. Example 6. Illustration 7. Case 8. Story 9. Anecdote 10. Fact 11. Figure 12. Table 13. Diagram 14. Chart 15. Graph 16. Map 17. Image 18. Picture 19. Photograph 20. Video 21. Audio 22. Document 23. Text 24. Speech 25. Interview 26. Survey 27. Questionnaire 28. Form 29. Tablet 30. Card 31. Label 32. Sign 33. Poster 34. Billboard 35. Advertisement 36. Commercial 37. Spot 38. Segment 39. Program 40. Series 41. Episode 42. Season 43. Year 44. Month 45. Week 46. Day 47. Hour 48. Minute 49. Second 50. Millisecond 51. Nanosecond 52. Picosecond 53. Femtosecond 54. Attosecond 55. Zeptosecond 56. Yoctosecond 57. Planck time 58. Age of the universe 59. Life expectancy 60. Half-life 61. Decay constant 62. Frequency 63. Wavelength 64. Amplitude 65. Phase 66. Period 67. Interval 68. Duration 69. Time 70. Space 71. Distance 72. Area 73. Volume 74. Mass 75. Weight 76. Force 77. Pressure 78. Temperature 79. Energy 80. Power 81. Work 82. Momentum 83. Impulse 84. Acceleration 85. Velocity 86. Speed 87. Direction 88. Angle 89. Distance 90. Area 91. Volume 92. Mass 93. Weight 94. Force 95. Pressure 96. Temperature 97. Energy 98. Power 99. Work 100. Momentum 101. Impulse 102. Acceleration 103. Velocity 104. Speed 105. Direction 106. Angle 107. Distance 108. Area 109. Volume 110. Mass 111. Weight 112. Force 113. Pressure 114. Temperature 115. Energy 116. Power 117. Work 118. Momentum 119. Impulse 120. Acceleration 121. Velocity 122. Speed 123. Direction 124. Angle 125. Distance 126. Area 127. Volume 128. Mass 129. Weight 130. Force 131. Pressure 132. Temperature 133. Energy 134. Power 135. Work 136. Momentum 137. Impulse 138. Acceleration 139. Velocity 140. Speed 141. Direction 142. Angle 143. Distance 144. Area 145. Volume 146. Mass 147. Weight 148. Force 149. Pressure 150. Temperature 151. Energy 152. Power 153. Work 154. Momentum 155. Impulse 156. Acceleration 157. Velocity 158. Speed 159. Direction 160. Angle 161. Distance 162. Area 163. Volume 164. Mass 165. Weight 166. Force 167. Pressure 168. Temperature 169. Energy 170. Power 171. Work 172. Momentum 173. Impulse 174. Acceleration 175. Velocity 176. Speed 177. Direction 178. Angle 179. Distance 180. Area 181. Volume 182. Mass 183. Weight 184. Force 185. Pressure 186. Temperature 187. Energy 188. Power 189. Work 190. Momentum 191. Impulse 192. Acceleration 193. Velocity 194. Speed 195. Direction 196. Angle 197. Distance 198. Area 199. Volume 200. Mass 201. Weight 202. Force 203. Pressure 204. Temperature 205. Energy 206. Power 207. Work 208. Momentum 209. Impulse 210. Acceleration 211. Velocity 212. Speed 213. Direction 214. Angle 215. Distance 216. Area 217. Volume 218. Mass 219. Weight 220. Force 221. Pressure 222. Temperature 223. Energy 224. Power 225. Work 226. Momentum 227. Impulse 228. Acceleration 229. Velocity 230. Speed 231. Direction 232. Angle 233. Distance 234. Area 235. Volume 236. Mass 237. Weight 238. Force 239. Pressure 240. Temperature 241. Energy 242. Power 243. Work 244. Momentum 245. Impulse 246. Acceleration 247. Velocity 248. Speed 249. Direction 250. Angle 251. Distance 252. Area 253. Volume 254. Mass 255. Weight 256. Force 257. Pressure 258. Temperature 259. Energy 260. Power 261. Work 262. Momentum 263. Impulse 264. Acceleration 265. Velocity 266. Speed 267. Direction 268. Angle 269. Distance 270. Area 271. Volume 272. Mass 273. Weight 274. Force 275. Pressure 276. Temperature 277. Energy 278. Power 279. Work 280. Momentum 281. Impulse 282. Acceleration 283. Velocity 284. Speed 285. Direction 286. Angle 287. Distance 288. Area 289. Volume 290. Mass 291. Weight 292. Force 293. Pressure 294. Temperature 295. Energy 296. Power 297. Work

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